

FIG. 10 is a right side elevational view of the apparatus;

FIG. 11 is a rear elevational view of the apparatus with the flipper mechanism adjacent the cartridge store;

FIG. 12 is a broken away, cross-sectional view of the cam arrangement of the upright traverse mechanism as might be taken along lines 12—12 of FIG. 16.

FIG. 13 is a broken away, cross-sectional view of the cam arrangement and the traverse mechanism beginning to pivot;

FIG. 14 is a broken away, cross-sectional view of the cam arrangement and traverse mechanism pivoted to lay right;

FIG. 15 is a rear elevational view of the apparatus with the flipper and traverse mechanisms pivoted to lay right;

FIG. 16 is a perspective view of the traverse mechanism broken away in a lay right position;

FIG. 17 is a rear elevational view of the apparatus with the flipper and traverse mechanism pivoted to lay left;

FIG. 18 is a broken away, cross-sectional view of the cam arrangement and traverse mechanism pivoted to lay left;

FIG. 19 is a left side elevational view of the apparatus with the flipper and transverse mechanisms pivoted to lay left.

FIG. 20 is a side elevational view of the drive loader mechanism in retracted position; and

FIG. 21 is a side elevational view of the drive loader mechanism in extended position.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

The optical disk cartridge handling apparatus 31 has an outer housing 32 which is supported by a base plate 34. A front panel 36 offers to the user a slot 37, closable by a sliding door 38 along with a key pad 40 and a display 42. The back wall 44 has therein a power plug 46, fan 48 for cooling the apparatus 31 and a power switch 50. SCSI plug and connectors 52 connect the apparatus 31 to a host computer (not shown) which controls the operation of the apparatus by way of the SCSI bus using SCSI common command set commands. On the back side of front panel 36 is mounted a motor bracket 54 which supports a door motor 56. A rack and gear assembly 58 connects the door motor 56 with sliding door 38 for opening and closing of the slot 37.

Referring to FIGS. 5-19, the major components of apparatus 31 may generally be seen with housing 32 removed. The optical disk cartridge handling apparatus 31 generally comprises an import/export element 60, cartridge or media store 80, a media transport element 121 including flipper mechanism 122, picker mechanism 160, drive loader mechanism 172 and traverse mechanism 300. The previously mentioned commercially available optical disk drives 20 are suitable within the apparatus 31 mounted in a side by side arrangement immediately below the cartridge store 80.

The import/export element 60 is located on the inside of front panel 36 just behind sliding door 38 when it is in the closed position. A carriage 62 is adapted to receive an optical disk cartridge 10. A motor bracket 63 is adjacent carriage 62 and supports an import/export motor 64. Motor 64 has a rotatable drive shaft 66 supporting a rubber tire or wheel 68 which will readily grip the flat surface of an optical disk cartridge 10. Tire 68

will move a cartridge 10 in or out of carriage 62 in either direction be it out of apparatus 31 through slot 37 or into the cartridge store 80.

An optical or photointerruptor sensor 70 optionally may be located within the import/export element 60 and positioned so that the cartridge 10 will pass between the emitter and collector of sensor 70. Such sensor means are sometimes referred to as "optos" in the industry. Sensor 70 can sense the presence of the cartridge 10 as it is placed into the import/export element 60 through slot 37. Initially, the sliding door 38 is moved to expose slot 37. A sensor 70 will sense the existence of cartridge 10 within the carriage 62 and engage motor 64 which will drive rubber wheel 68 to move the cartridge into the cartridge or media store 80. Should the cartridge 10 be placed into the import/export element 60 backwards, the firmware together with the microprocessor will activate motor 64 and drive the cartridge 10 out of the carriage 62 through the slot 37 and by retracted sliding door 38. Omron Tateisi Electronics Company of Osaka, Japan, manufactures and markets a suitable photointerruptor 70 designated under the part no. EE-SX461-P11.

Centrally located on base plate 34 is cartridge or media store 80. Store 80 includes vertical side plates 81, vertical rear plate 81.5, top plate 83 and bottom plate 85. Top plastic guide panel 87 is mounted on the underside of top plate 83 and bottom plastic panel 89 is mounted on the top side of bottom plate 85. Guide panels 87 and 89 form vertical slots 90.1 to 90.20. Illustratively, 20 vertical slots or storage elements 90 are shown in cartridge store 80 and are numbered from the right side of apparatus 31. Conceivably more or less slots 90 could be contained in cartridge or media store 80. Vertical rear plate 81.5 suitably may have various openings therein to accommodate the import/export element as well as the mounting of optical disk drive 20 between vertical side plates 81 immediately below the vertical slots 90.

The storekeeper bracket 91 is appropriately affixed to the front side of top plate 83 and supports a comb 93 wherein the individual comb elements maintain the alignment of optical disc cartridges 10 within cartridge media store 80 by engagement with pick notches 12. Should any of the optical disk cartridges 10 be jarred or accidentally moved out of the cartridge store 80, the discreet optical sensor 96, including emitter 98 and receiver 100, will sense this occurrence and stop all operations within the apparatus 31 until all cartridges 10 are again properly aligned within the cartridge or media store 80. General Electric of Auburn, N.Y., manufactures a suitable infrared emitter and collector marketed under part nos. F5D1 and L14G3.

The media transport element 121 includes the flipper mechanism 122 as well as the picker mechanism 160, drive loader mechanism 272, and traverse mechanism 300. The flipper mechanism 122 has a center line C about which the flipper mechanism 122 symmetrically rotates. Flipper mechanism 122 is generally comprised of a side "A" cartridge holder plate 124 which has a cartridge guide lip 126 and a slot 127 therein. Side "B" cartridge holder plate 128 also suitably has a cartridge guide lip 130 and a slot 131. Both plates 124 and 128 have opposing plastic guides 132 for retaining the cartridge 10 between the plates 124 and 128. Plates 124 and 128 are arranged about the center line as for symmetrical rotation of the flipper mechanism 122 and cartridge 10. Plates 124 and 128 are connected opposite the media store 80 by machined bar 134.